DOCUMENT RESUME

ED 482 236 IR 058 847

AUTHOR	Zorich, Diane M.
TITLE	A Survey of Digital Cultural Heritage Initiatives and Their Sustainability Concerns. Managing Economic Challenges.
INSTITUTION	Council on Library and Information Resources, Washington, DC.
ISBN	ISBN-1-932326-02-2
PUB DATE	2003-06-00
NOTE	56p.
AVAILABLE FROM	Council on Library and Information Resources, 1755 Massachusetts Ave., NW, Suite 500, Washington, DC 20036 ($20). Web site: http://www.clir.org/. For full text: http://www.clir.org/ pubs/reports/pub118/pub118.pdf/.
PUB TYPE	Reports - Research (143)
EDRS PRICE	EDRS Price MF01/PC03 Plus Postage.
DESCRIPTORS	*Cultural Background; Cultural Centers; Information Management; Information Technology; *Program Evaluation
IDENTIFIERS	*Academic Program Evaluation Paradigm; Council on Library and Information Resources; Cultural Organizations; Digital Preservation; Digital Technology; North America

ABSTRACT

In September 2002, the Council on Library and Information Resources (CLIR) commissioned a survey of North American-based digital cultural heritage initiatives (DCHIs). The purpose of the survey was to identify the scope, financing, organizational structure, and sustainability of DCHIs. To gain a funder's perspective on these initiatives, the survey also included a few public and private funding organizations that support projects with a digital cultural heritage component. Thirty-three organization or projects and five funding agencies or foundations were included in the survey. The findings outlined throughout this report identify concerns about the current status and tenuous state of many digital cultural initiatives. These findings, in concert with the recommendations proposed, offer a blueprint for those exploring appropriate strategies to support and strengthen digital cultural initiatives. The number and diversity of issues that affect DCHIs and jeopardize their future warrant a coordinated and consensus-driven approach to the problem. The report consists of five parts: background; review of Digital Cultural Heritage Initiatives; review of funders of Digital Cultural Heritage Initiatives; recommendations; and summary. Appendixes include a list of participating organizations and contacts; CLIR survey for DCHIs; CLIR survey for organizations funding DCHIs. (AEF)

Reproductions supplied by EDRS are the best that can be made from the original document.

ED 482 236

A Survey of Digital Cultural Heritage Initiatives and Their Sustainability Concerns

by Diane M. Zorich

June 2003

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

B.H. Leney

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

IR058847

BEST COPY AVAILABLE

COUNCIL ON LIBRARY AND INFORMATION RESOURCES

2

This report is one in a series from CLIR on
MANAGING ECONOMIC CHALLENGES

A Survey of Digital Cultural Heritage Initiatives and Their Sustainability Concerns

by Diane M. Zorich

June 2003

Council on Library and Information Resources
Washington, D.C.

About the Author

Diane M. Zorich is an information management consultant for cultural organizations. She specializes in planning and managing the delivery of cultural information over digital networks. Her clients include the J. Paul Getty Trust, The Huntington Art Library, the Metropolitan Museum of Art, the American Association of Museums, and many other cultural organizations and institutions.

Before establishing her consultancy, Ms. Zorich was data manager at the Association of Systematics Collections in Washington, D.C., and documentation manager at the Peabody Museum of Archaeology and Ethnology at Harvard University. She served as past president and Board member of the Museum Computer Network, and currently serves as chair of that organization's Intellectual Property Special Interest Group.

Ms. Zorich has published and lectured extensively on issues related to network access to cultural information. She is the author of *Introduction to Managing Digital Assets: Options for Cultural and Educational Organizations* (1999, The J. Paul Getty Trust), and was project manager for the publication *A Museum Guide to Copyright and Trademark* (1999, American Association of Museums). Her forthcoming publication, *Developing Intellectual Property Policies: A Guide for Museums* (Canadian Heritage Information Network/National Initiative for a Networked Cultural Heritage) will be out in fall 2003.

ISBN 1-932326-02-2

Published by:

Council on Library and Information Resources
1755 Massachusetts Avenue, NW, Suite 500
Washington, DC 20036
Web site at http://www.clir.org

Additional copies are available for $20 per copy. Orders must be placed through CLIR's Web site.

The paper in this publication meets the minimum requirements of the American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials ANSI Z39.48-1984.

Copyright 2003 by the Council on Library and Information Resources. No part of this publication may be reproduced or transcribed in any form without permission of the publisher. Requests for reproduction should be submitted to the Director of Communications at the Council on Library and Information Resources.

Contents

Acknowledgments iv
Preface v
Acronyms vi

Part I: Background 1
Introduction 1
Participants and Process 1
The Selection Process 1
The Survey Process 2
Timeframe 4

Part II: Review of Digital Cultural Heritage Initiatives 4
Findings 4
Missions 4
Products and Services 5
Organizational Types 8
Governance 10
Staff 11
Needs Assessment 12
Founding History 13
Other Organizational Alliances 14
Sources of Financial Support 14
Business Models 19
Financial Management 21
Sustainability Issues 22
Becoming a Sustainable Organization 31

Part III: Review of Funders of Digital Cultural Heritage Initiatives 32
Reasons for Funding DCHIs 32
Funding Support 33
The Impact of the Economy on Funding Sources 34
Evaluating and Encouraging Sustainability 34
Special Sustainability Initiatives at Public Funding Agencies 35

Part IV: Recommendations 36
Planning and Marketing 36
Training 37
Integration and Culling 37
Stable Repositories for Digital Cultural Resources 38
Fostering Communication Between DCHIs, Funders, and Their Cultural Heritage Constituency 38

Part V: Summary 39

Appendixes 41
A. Participating Organizations and Contacts 41
B. CLIR Survey for Digital Cultural Heritage Initiatives 42
C. CLIR Survey for Organizations Funding Digital Cultural Heritage Initiatives 43
Endnotes 44

Acknowledgments

My sincere thanks to the members of the National Review Steering Committee, particularly Council on Library and Information Resources (CLIR) President Deanna Marcum, for assistance in all phases of this project. Thanks are also due to Cynthia Burns and Melanie Kamm of CLIR for facilitating contacts and follow-up tasks between CLIR, the author, and survey participants. I am also grateful to Ann Schneider for discussions about the Getty Los Angeles Electronic Cataloguing Initiative and to John Unsworth, Institute for Advanced Technology in the Humanities, and to the participants of the Allied Digital Humanities Organizations Committee (ADHOC), who allowed me access to their closed discussion list. Finally, my deepest thanks to the 38 individuals who participated in this survey on behalf of their organizations.

Preface

Nearly every organization whose mission includes promoting access to information is well aware of the value of digital collections. To cultural organizations and funders alike, the prospect of making collections available to new and distant audiences is compelling. Digital technology is finding its way into cultural organizations, and it offers great promise for enhancing access. However, digitization efforts, despite everyone's good intentions, rise and fall on the waves of external funding.

New organizations have been created to promote and manage a growing number of digital initiatives. Some traditional organizations have added projects to accommodate the digital agenda, but they often treat these projects as special initiatives, rather than long-term programs that will require an ongoing commitment of funding, staffing, and time. The economic downturn has increased the vulnerability of many digital programs, especially those run by very small organizations that lack the human or financial resource cushion to sustain "add-on" programs.

The Council on Library and Information Resources (CLIR) has been watching these developments with concern. After Charles Henry, of Rice University, and Stanley Katz, of Princeton University, developed a working paper, *American Cultural Heritage Initiatives: A National Review,* which called for a detailed study of the situation, CLIR decided to support a study that would explore how the many small cultural organizations that have been launched in recent years will be sustained. CLIR commissioned museum consultant Diane Zorich to conduct the study. A steering committee composed of Charles Henry, Stanley Katz, Samuel Sachs, Patricia Williams, and Deanna Marcum provided guidance and advice throughout the study.

We believe the work presented here will be invaluable to all cultural organizations as they struggle to find the rightful place for digital initiatives in their agendas. We hope that funding agencies will also find the study useful.

Deanna B. Marcum
President, CLIR

Acronyms

AAUP	American Association of University Presses
ACH	Association for Computing in the Humanities
ACLS	American Council of Learned Societies
AfA	Americans for the Arts
AMC	American Music Center
AMICO	Art Museum Image Consortium
ARL	Association for Research Libraries
ARLIS	Art Libraries Society
BOLD	Berkman Online Lecture and Discussion Series
CAA	College Art Association
CDP	Colorado Digitization Project
CHIN	Canadian Heritage Information Network
CIMI	Consortium for the Computer Interchange of Museum Information (organization now uses only the acronym)
CLIR	Council on Library and Information Resources
CNI	Coalition for Networked Information
DCHI	Digital cultural heritage initiatives
DCMI	Dublin Core Metadata Initiative
DHC	Dance Heritage Coalition
DLI-2	Digital Library Initiative Phase 2
EAD	Encoded archival description
ECHO	Exploring Cultural Heritage Online
GRI	Getty Research Institute
IATH	Institute for Advanced Technology in the Humanities
IMLS	Institute of Museum and Library Science
ISO	International Organization for Standardization
JSTOR	Journal Storage Project
LSTA	Library Services and Technology Act
MCN	Museum Computer Network
MESL	Museum Educational Site Licensing Project
MoA	Making of America
NEA	National Endowment for the Arts
NEH	National Endowment for the Humanities
NHPRC	National Historical Publications and Records Commission
NINCH	National Initiative for a Networked Cultural Heritage
NISO	National Information Standards Organization
NSF	National Science Foundation
OAC	Online Archive of California
RLG	Research Libraries Group (organization now uses only the acronym)
SAA	Society of American Archivists
SSRC	Social Science Research Council
TEI-C	Text Encoding Initiative Consortium
UVA	University of Virginia
VRA	Visual Resources Association
WWP	Women Writers Project

Part I: Background

Introduction

In September 2002, the Council on Library and Information Resources (CLIR) commissioned a survey of North American-based digital cultural heritage initiatives (DCHIs). The purpose of the survey was to identify the scope, financing, organizational structure, and sustainability of DCHIs. To gain a funder's perspective on these initiatives, the survey also included a few public and private funding organizations that support projects with a digital cultural heritage component.

The survey was a preliminary step in a larger effort aimed at developing recommendations for a coordinated strategy to sustain and strengthen digital cultural heritage initiatives and their by-products. The effort began in July 2002, when Dr. Charles Henry (Rice University) and Dr. Stanley Katz (Princeton University) developed an internal working paper, entitled "American Cultural Heritage Initiatives: A National Review," that examined factors that compromise the sustainability of DCHIs. CLIR established a steering committee to explore these issues further, broadened the inquiry to North American institutions, and commissioned this survey to inform the steering committee (and the community) as they explored appropriate strategies to support and strengthen digital cultural heritage initiatives.

Participants and Process

The Selection Process

For the purposes of this survey, a "digital cultural heritage initiative" was interpreted very broadly as an organization or a program that

- develops or implements a project that yields a digital product—such as an image database, a music rights management database, scholarly e-book, or digital research tool—to be used by one or more of the sectors in the cultural or educational community. Examples of organizations in this category include JSTOR, the Women Writers Project (WWP) at Brown University, and the History E-Book project sponsored by the American Council of Learned Societies (ACLS).

- addresses issues integral to the promotion and use of digital cultural heritage, such as intellectual property, standards, best practices, or policies in the digital arena. Examples of organizations in this category are the National Initiative for a Networked Cultural Heritage (NINCH), the Visual Resources Association (VRA), and the Berkman Center for Internet and Society.

Thirty-three organization or projects and five funding agencies or foundations were included in the survey (see Appendix A for a list of participating organizations). The organizations and agencies were chosen through an iterative process by the CLIR Steering Committee and the survey consultant, who identified groups representing a cross-section of the cultural community: performing arts organizations; scholarly and library associations; museum, archive, and visual resources organizations; publishing groups; standards initiatives; and humanities centers and projects. Organizations and projects also were selected on the basis of their reputation and the active role they play in their respective sectors. In the interests of time, and to simplify the process, the Steering Committee decided to limit the survey to North American organizations.

Several organizations on the original list of survey participants were excluded for one of the following reasons:

- further investigation revealed that their mission and activities did not include digital initiatives
- the organizations were international in governance and funding and thus were beyond the North American parameters defined for this project
- the organizations chose not to respond to an invitation to participate

The five funding organizations included in the survey represent a mix of government agencies and private foundations. They were selected because of their reputation, visibility, and track record as key funders of DCHIs.

The final list of DCHIs and funding organizations is by no means comprehensive, but it does offer representation from a variety of cultural sectors that can yield useful insights and inform future studies of sustainability issues and concerns.

The Survey Process

The Steering Committee initially contacted survey participants by e-mail, outlining the project and its purpose, introducing the survey consultant, and asking for their participation. This contact was followed shortly thereafter by an e-mail from the survey consultant requesting a scheduled phone interview.

Because the nature of information required from the DCHIs and funding agencies differed, a separate survey was developed for each group. The survey of DCHIs gathered information in the following areas:

- mission
- type of organization (e.g., membership, for-profit, not-for-profit, consortium)

- digital products or services offered
- needs assessments, market analyses, or user studies conducted
- relationships with other organizations
- financial support and business plan
- problems with achieving and maintaining sustainability

The survey of funding organizations gathered information about the following:

- mission
- funding categories for DCHIs
- DCHI projects funded over the last year
- reasons for funding DCHIs
- assessment of DCHIs' sustainability issues

Both surveys were brief and attempted to strike a balance between the information needed and the short time available (seven weeks) to collect, synthesize, and analyze that information. The survey consultant developed all the survey questions on the basis of discussions with Steering Committee members and a review of early project documents that identified goals and objectives. The consultant randomly tested survey questions using information derived from a few organizational Web sites; however, this review was not scientific or comprehensive. As the interviews got under way, it became apparent that more flexibility was required: organizations with track records ("mature" organizations) needed to be asked questions with a slightly different cast than did newly formed projects. The consultant adjusted the survey questions accordingly, creating a series of "prompting questions" to generate discussion by various types of organizations. (See Appendix B for the DCHI survey and Appendix C for the funding organization survey.)

Information was collected in two ways: (1) by reviews of organizational Web sites; and (2) by telephone interviews between the consultant and a senior executive or administrator of the participating group. This two-part process was necessary because information concerning the more sensitive survey questions (those involving finances and sustainability) is not usually provided in a public forum such as a Web site. To maximize everyone's time, the phone interviews were devoted solely to questions not addressed on an organization's Web site. As a result, the average phone interview was only 25 minutes long. The Web site reviews took up to an hour or more.

All participants were assured of the confidential nature of their discussions at two points in the process: in the e-mail sent by the Steering Committee and at the initiation of the phone interview. In addition, participants were given an opportunity to approve, change, or omit cited comments or nonpublic information about their organization that appeared in an earlier proprietary version of this report submitted to CLIR in November 2002.

Timeframe

Survey planning and development took place in early September 2002, and survey information was gathered (through interviews and Web site reviews) between September 23 and November 5, 2002. Results originally were presented to CLIR in late November 2002.

In the interval between data gathering and the writing of this published report (May 2003), programmatic and organizational changes have taken place at many of the DCHIs that participated in the survey. Readers should be aware that the information reported here represents a snapshot of conditions and circumstances in the fall of 2002.

Part II: Review of Digital Cultural Heritage Initiatives

Findings

The DCHIs that participated in the survey exhibit a diverse array of missions, objectives, programs, and governance types. They also represent various stages of organizational maturity: some are newly emerging initiatives (for example, ARTstor), and others have been in operation for decades (e.g., American Music Center [AMC] and RLG [formerly the Research Libraries Group]). Volunteers run a few of the organizations; large groups of paid staff manage others. Most of the participating DCHIs were introduced to the digital arena no earlier than the 1990s, when advances in digital imaging and Internet accessibility, coupled with lower-priced technology, made it feasible for digital projects to be undertaken by cultural and educational organizations.

This section summarizes findings for several characteristics that define DCHIs: their missions, product and service offerings, organizational types, governance structures, founding histories, organizational alliances, sources of financial support and management, business models, and sustainability concerns.

Missions

Mission statements explain the purpose of an organization and serve as a guidepost for its growth and development. A review of the mission statements of the DCHIs in this survey reveals that the purpose of these organizations lies in one or more of the following areas:

- *To serve the needs of a particular profession or discipline.* The primary mission of most of the DCHIs surveyed is to provide services to a specific community or field. For example, the Museum Computer Network (MCN) addresses the needs of museum information management and technology professionals, while Americans for the Arts (AfA) advances the arts, in all their forms, throughout the United States. Many DCHIs, such as the Society of American Archivists (SAA), not only serve a profession (archivists) but also address the needs of a field (historical records and archives management).

- *To develop and maintain a digital product.* A subset of the DCHIs exists to create, foster, and maintain a specific digital resource. The Text Encoding Initiative Consortium (TEI-C), for example, was established to "maintain, develop and further the use of the TEI standard,"[1] an encoding schema for humanities text that facilitates online access to text-based materials. All activities of the TEI-C focus on sustaining and promoting that standard. The Colorado Digitization Project (CDP) was created to develop a digital library of Colorado cultural, historical, and archival materials. Although its activities are far ranging (for example, digitization, standards development, scanning centers), they are all undertaken in the service of building a virtual collection of Colorado cultural heritage resources.
- *To explore the digital arena and promote beneficial digital cultural heritage policies.* A small group of DCHIs in this survey examine and influence broad policy issues affecting society, culture, and the online environment. For example, the mission of the Berkman Center for the Internet and Society is to "explore and understand cyberspace, its development, dynamics, norms, standards, and need or lack thereof for laws and sanctions," with the long-term goal of helping "pioneer its development."[2] NINCH defines its mission as educating and influencing policy and practice related to cultural heritage in the digital arena.
- *To contribute to the public good.* Nearly all DCHI mission statements include, either by implication or by explicit wording, a strong commitment toward undertaking their work for a greater public good. The Institute for Advanced Technology in the Humanities (IATH), for example, notes that its purpose is to provide humanities scholars with tools, technologies, and time so that they may "produce lasting contributions to the human record."[3] Similarly, the mission statement of the American Association of University Presses (AAUP) notes that the organization helps its members fulfill their commitments to "scholarship, the academy, and society."[4]

Products and Services

While mission statements are key to understanding the purpose of an organization, a more informative indicator of an organization's role in the digital cultural heritage landscape is the products and services it offers. The DCHIs in this survey offer products and services in the following areas.

Products

Digital Libraries and Portals: Broadly defined as distinct types of digital information (for example, databases, Web sites, teaching resources) brought together in a product that, to the user, appears seamless and unified.

Examples

— The Canadian Heritage Information Network's (CHIN's) *Virtual Museum Canada*,[5] an online portal for Canadian cultural heritage that integrates content provided by Canadian museums for use by the Canadian public

— The University of Michigan's *Making of America* (MoA) digital library,[6] a digital library of primary sources in American social history from the antebellum period through reconstruction

E-publishing: A rubric that encompasses publishing efforts (for example, CD-ROM or online publishing) developed and distributed entirely within a digital environment. E-publishing includes tools and functions that allow readers to use materials in ways that are not possible with a print publication (such as searching and hyperlinking). Content may include traditional print publications that are retrospectively converted into an e-publishing product, as well as electronic ("born-digital") titles that are entirely computer generated and presented and that have no analog equivalent.

Examples

— ACLS's *History E-Book Project*,[7] an electronic publishing initiative for scholarly monographs in history
— AMC's *NewMusicBox*,[8] a Web magazine focusing on new American music and featuring traditional print magazine items, such as articles and images, as well as sound and audio files
— CAA.*Reviews*,[9] an online publication devoted to the review of new books and exhibitions in the field of art and art history

Online Educational and Scholarly Databases: Scholarly and educational resources that package text, image, and audio data with specially designed software tools to assist in compilation, research, and access.

Examples

— The Art Museum Image Consortium's *AMICO Library*,[10] a licensed educational resource of digital multimedia documenting works of art made available by subscription to universities and colleges, public libraries, and elementary and secondary schools
— AMC's *NewMusicJukebox*,[11] a virtual library, listening room, and music marketplace that provides access to scores, streaming audio, and information about music by American composers

Online Reference Databases: Reference information provided to users through a Web interface.

Examples

— Americans for the Arts (AfA) *Online Field Directory*,[12] a searchable directory of local, state, regional, and national arts service organizations in the United States
— Association of Research Libraries (ARL) *Digital Initiatives Database*,[13] a Web-based registry for descriptions of digital initiatives in or involving libraries
— Dance Heritage Coalition's (DHC) *Finding Aids Database for Archival Collections of Dance Materials*,[14] a collection of archival finding aids for materials related to dance

Software Tools: Packages of software programs written specifically for use with cultural content in digital applications.

Examples

— IATH's research tools,[15] software to assist IATH fellows with their digital humanities computing projects and that can also be used in other digital humanities applications
— TEI-C's software tools,[16] a suite of software tools developed by TEI-C members that can be used to create, manage, and process TEI documents

Supplemental Resources: Guidelines, procedures, best practices, standards, publications, and other materials developed by DCHIs to support a special digitization effort.

Examples

— Dublin Core Metadata Initiative's (DCMI) *Metadata Element Set*,[17] a reference document that identifies and describes all the elements in the Dublin Core standard
— CIMI (formerly the Consortium for Computer Interchange of Museum Information) SPECTRUM DTD,[18] an XML schema that enables museums to encode descriptive information relating to museum objects
— The Getty Research Institute's (GRI) Standards and Digital Resource Management Program,[19] data standards, guidelines, vocabularies, and publications that support practices necessary for developing, managing, preserving, and delivering information in electronic form

Services

Advocacy: Organized efforts to promote policies or practices beneficial to digital cultural heritage within the cultural community or with individuals or groups whose decisions affect the cultural community. While most DCHIs pursue an advocacy role at particular points in time, those that have strong, formal advocacy programs are large, membership- or policy-based organizations such as AfA, AAUP, and ARL.

Consulting: Outside services provided to an organization for a particular project. Examples of such services include advice, project management support, software development, and assistance in data conversion. Many DCHIs provide free, informal consulting to members, colleagues, or related organizations. A smaller number offer formal, fee-based consulting services for digital cultural projects.

Education and Training: Physical or virtual workshops, seminars, tutorials, or guides that focus on some aspect of digital cultural heritage training. Examples of virtual offerings include ARL's Online Lyceum[20] and the Berkman Center's BOLD (Berkman Online Lecture and Discussion series) computer-mediated lectures.[21]

Funding: Financial support targeted for special projects or programs to offset their costs. Apart from the funding organizations surveyed in this project, a few DCHIs offer funding or in-kind contributions to their members or constituent groups. The CDP, for example, offers "subgrants" (from the Library Services and Technology Act [LSTA]

and state funding sources) to Colorado cultural institutions that wish to join the CDP's Heritage Collections digital library, but need financial assistance for digitization and training. Similarly, CLIR provides funds to special projects aligned with CLIR's own interests in long-term accessibility of scholarly resources. Other DCHIs, such as IATH, offer funding in the form of fellowships and in-kind contributions of space, computer resources, and staff.

Networking Opportunities: Physical or virtual meeting opportunities such as conferences, online forums, and listservs that provide "spaces" for discussing issues, problems, or topics in the area of digital cultural heritage. Nearly every membership-based DCHI offers a member listserv, and some are developing online forums to encourage scholarly discussions on topical issues.

Pilot, Testbed, or Proof-of-Concept Projects: Discrete, well-defined experiments designed to explore or test the feasibility of a specific concept in the digital cultural heritage arena. Many DCHIs develop, host, or participate in these kinds of projects. CIMI, for example, develops and participates in testbed projects to implement and evaluate the usefulness of various standards on museum data sets within a controlled environment. Participation may involve offers of content, but usually also involves commitments of time and effort on the part of DCHI staff to the project.

Technical and User Support: Online or phone support for users who need assistance with the technical features or functions of a product. Provided most frequently by DCHIs that market their products or services to a large audience of diverse users.

Other Services: DCHIs also offer the following services:

- *Technical infrastructure* for DCHI projects other than their own. IATH offers these services for the Humanist e-mail discussion group; H-Net offers this service to more than 100 newsletters, forums, and lists for various humanities groups.
- *Data enhancement services* that manipulate or enhance data (by markup, watermarking, identifier tagging, mapping, or cleanup) for improved accessibility in databases. RLG, AMICO, and CDP offer various data enhancement services to their members and partners.
- *Digital library distribution services* for products developed by others. RLG distributes digital products it develops as well as products developed by others.
- *Content submission tools* that help users more easily contribute information to a database or archive. The DHC is developing a Web-based encoded archival description (EAD) template for contributors who wish to submit an archival finding aid to its database.

Organizational Types

The DCHIs in this survey define themselves by an array of terms reflecting their organizational structure and classification. Listed in order of decreasing frequency, these terms are as follows:

Membership organizations

Most of those surveyed identify themselves as membership organizations that serve a particular constituency. These organizations can be subdivided as follows:

Fee-based membership. Individual or institutional members pay either a flat rate or scaled fee (for individuals the fee is scaled to salary; for institutions it is scaled to some metric used to assess institutional size, such as student enrollment or yearly operating budget). In return, members receive benefits from the organization that nonmembers do not receive (for example, lower conference rates or a free subscription to the organization's newsletter or journal). Membership may be open to all or offered by invitation only. DCHIs that have subscribers are included in this category, since subscribers receive special services (for example, access to a product or technical support) in return for a fee.

Content-based membership. Institutions contribute content to a digital resource in addition to, or in lieu of, a fee. In return, members receive special services (for example, access to a subscription resource or assistance in digitizing materials to contribute to the resource).

Consortial-based membership. Institutions contribute services (and sometimes content) to the organization, in addition to a fee. In return, the members have an active role in influencing the consortium's activities and are direct recipients of any products or services that result from their participation.

Organizations may use a variety of terms, such as "alliance," "coalition," "collaboration," and "consortium," to identify themselves as membership-based groups. The choice of term reflects subtle perceptions of how an organization views its membership, but usually has no functional significance. "Consortia" are a frequent exception to this rule: they imply a small, dedicated group of institutions that have a large say in the development, governance, and programming of the DCHI and from which significant commitments of time and service are expected.

Independent research projects and programs

Independent research projects and programs have no membership base or independent infrastructure. They exist within the context of a larger program, such as a university (for example, The Women Writers Project, the Berkman Center for the Study of the Internet and Society), a foundation (for example, ARTstor and the Getty Research Institute), or an independent research organization (for example, the Culture, Creativity and Technology Program of the Social Science Research Council [SSRC]), and are staffed and managed by employees of these institutions.

There is a hybrid version in this category: DCHIs hosted by a larger organization that rely on a network of worldwide collaborators to conduct project work. H-Net is an example of such an initia-

tive: it receives infrastructure support from Michigan State University, but the initiative itself is largely undertaken by an extensive network of international volunteers rather than the host institution and its staff.

Independent research organizations

Two DCHIs (SSRC and CLIR) can be viewed as stand-alone entities that are not affiliated with any organization and do not have a membership-based infrastructure. These organizations pursue complex and diverse research agendas independently and serve a much broader constituency than membership-based groups do.

While most DCHIs in the survey can be placed in one of the above-mentioned categories, overlaps and exceptions are common. AMICO, for example, could be categorized as a hybrid consortium/content/fee-based membership organization (of art museums) as well as a fee-based membership organization (of subscribers). TEI-C functions more like a fee-based membership organization than a traditional consortium: members pay a fee to join and receive benefits in return, but are not required to participate in the work of the organization.

Governance

A variety of formal entities—such as boards of directors and advisory, steering, and executive committees—govern DCHIs, although in some instances, governance is placed in the hands of a single individual or two or three individuals in a reporting chain. This frequently happens, for example, when the DCHI is part of a larger program, such as a technology division within a university.

In instances where boards govern DCHIs, some patterns are apparent in board structure and composition. Most member-based DCHIs elect individuals from their membership to serve on their boards; however, there are exceptions. RLG, for example, has a partially elected, partially appointed board. If a DCHI has no membership base, board members are appointed from among a larger community of constituents with whom the DCHI interacts. A handful of DCHIs have corporate representation on their boards, albeit for different reasons. The AMC's board, for example, is carefully constructed to include a mix of composers, music producers, and corporate professionals from the music industry who can bring special resources to bear in promoting interest in new American music. The AfA board—a mix of art organization executives and corporate and individual patrons of the arts—is, in part, a historical artifact of the merger between two organizations (the National Assembly of Local Arts Agencies and the American Council for the Arts) that represented these constituencies.

The three federal agencies reviewed—the Institute of Museum and Library Services (IMLS), the National Endowment for the Humanities (NEH), and the National Historical Publications and Records Commission (NHPRC) have presidential or statutory-appointed advisory boards made up of professionals and representatives of

various government departments. IMLS's two advisory boards also include members of the general public.

A review of board members across all the surveyed DCHIs reveals that only 16 individuals (from a total of nearly 400) served on more than one board and that none served on more than three. This overlap is not very large or very surprising, given that the DCHIs chosen for this survey are quite varied. One would not, for example, expect members of AMC's board to also serve on a board for AMICO, since these two organizations address entirely different sectors and interests. When overlap does occur, it is found among DCHIs whose agendas cut across cultural sectors (for example, NINCH and the Coalition for Networked Information) or who have a founding relationship with one another (for example, JSTOR, ARTstor, and The Andrew W. Mellon Foundation).

The DCHI boards use a variety of mechanisms to carry out their programmatic and fiscal responsibilities. Boards of organizations with paid staff delegate day-to-day management and administrative duties to that staff; this allows the boards to focus on developing strategic directions, establishing and reviewing policy, and providing oversight and leadership to the organization. Boards of volunteer-run DCHIs also do these latter activities, but they must manage the day-to-day administration of the DCHI as well. Both types of boards rely extensively on other groups—committees, working groups, or task forces—to assist them in undertaking research, investigating issues, and carrying out particular tasks. The number and types of these smaller governance groups vary tremendously among DCHIs, depending upon their membership and programmatic needs.

DCHIs that are not independent organizations (that is, groups that are part of a larger institution or organization) are governed in a variety of ways. The smaller DCHIs vest decision making and leadership in the hands of one or two people; these individuals report to managers in the parent organization in which they are housed. The larger DCHIs are usually governed by a steering or executive committee partially made up of individuals from their parent organizations. CNI, for example, is governed by a steering committee of members appointed by its founding organizations, EDUCAUSE and ARL. The governance of many nonindependent DCHIs is assisted by advisory committees who give advice on content (for example, WWP) and may also advise on management and development of the initiative (for example, ARTstor).

Staff

DCHIs are staffed both by paid and volunteer professionals. In this sample, the numbers of paid staff in a DCHI ranged from zero to more than 100. Large staffs are found in large organizations, although staff size tends to reflect not only an organization's membership base but also the complexity of products and services its offers. A review of personnel titles reveals that the following professionals staff DCHIs:

- senior management: executive directors, presidents, associate or deputy directors

- operations: operations managers, financial directors, accountants, controllers
- publications: editors, directors of publishing, managing editors, writers, e-publishing directors, publication assistants
- information technology: chief technology officers, information technology specialists, media designers, Web masters and Web designers, programmers, system coordinators, technology analysts, database coordinators
- communications and marketing: development officers, communications directors, marketing directors, events and meetings directors, exhibition managers, marketing services managers, advertising managers
- program and special project staff: project managers, program officers, program associates, directors of special projects, program analysts
- user/member relations: directors of user services, member services directors, membership development, career services managers
- administrative support staff: administrative assistants or associates, receptionists, secretaries, office managers

The mean staff size for the DCHIs surveyed is 15 (median = 9), but this figure must be considered cautiously because of the way organizations often count (or more accurately, neglect to count) staff. In particular, DCHIs housed in universities or large parent organizations often report "No paid staff" for an initiative, even though individuals from the parent organization are frequently assigned to the DCHI to help with its work. In effect, the parent organization is providing staff, but in an unofficial, unquantified manner that obscures the true number of staff members drawn upon to develop or sustain these projects.

Needs Assessment

Each DCHI was asked whether a needs assessment was undertaken before its establishment. Only one DCHI in this survey—the Dance Heritage Coalition—emerged as the result of a formal needs assessment. In this instance, a field-wide study funded by the Mellon Foundation and the National Endowment for the Arts (NEA) evaluated the state of preservation and documentation of American dance and recommended the formation of a coalition of major dance collection repositories which together would constitute a national dance documentation and preservation network. The NEA made funding available to several of the larger dance collection repositories, which formed an umbrella organization that became the Dance Heritage Coalition.

Nine DCHIs reported that a particular study, seminal document, survey of professionals, or legislative act served as partial impetus for their creation. The idea for JSTOR, for example, emerged from a host of studies the Mellon Foundation had commissioned over the years that identified various sustainability concerns in libraries. A 1980 poll of visual resource curators from the College Art Association

(CAA) and the Art Libraries Society (ARLIS) determined there was considerable interest in creating a separate organization of image curators, resulting in the formation of the Visual Resources Association (VRA). The Museum Educational Site Licensing Project (MESL), a project of the former Getty Information Institute, was the unofficial impetus for AMICO.

Founding History

DCHIs are created or founded in a variety of ways. An individual or a small group of individuals often plays a prominent role. For example, the WWP was the idea of several Brown University professors who thought emerging digital technologies would make the hard-to-find works of pre-1850 women writers more accessible. The DCMI had its roots in a hallway brainstorming conversation among four individuals at a conference. The efforts of a few librarians and archivists who wanted to work through the issues of digital preservation and access for books and monographs resulted in the MoA digital library.

Organizational collaboration supported the formation of many of the initiatives surveyed. CIMI, for example, was originally a program of the Museum Computer Network. It was launched into its current independent status by the efforts of CHIN, RLG, and the former Getty Art History Information Program. Similarly, NINCH had its origins in the support of three sponsoring organizations: ACLS, CNI, and the former Getty Information Institute.

Some DCHIs have resulted from mergers of existing organizations. The Commission on Preservation and Access and the Council on Library Resources merged to form CLIR, while the National Assembly of Local Arts Agencies and the American Council for the Arts joined forces to become the AfA.

Finally, some DCHIs emerged from dissent or dissatisfaction within a large organization. If a particular organization failed to meet the needs of some of its members, or if a subset of its members felt they had unique interests apart from those of the organization, these members formed their own offshoot organization to more adequately address their concerns.

The history of many of the organizations in this survey spans several decades (the earliest, the College Art Association, was founded in 1911), but the digital projects they sponsor or support took root only in the 1990s, when it first became feasible to explore and experiment with emerging technologies and applications, and when doing so exposed many unanticipated challenges and issues. Two notable exceptions to this chronology are CHIN and RLG. CHIN began automating museum collections in the 1970s as part of the federally mandated National Inventory Programme of the Canadian government. RLG began the first of its many digitization projects in 1980, when it launched RLIN as an online shared catalog database.

Other Organizational Alliances

DCHIs tend to affiliate with other organizations that share their mission or an objective. Affiliation often is formalized through membership or through various types of collaborative relationships. Twenty of the DCHIs in this survey are members of NINCH, reflecting the broad reach of this organization across diverse cultural heritage sectors. A few of the DCHIs surveyed are also members of ACLS, RLG, TEI-C, CNI, and CIMI. However, the most frequent types of alliances are between a DCHI and organizations specific to its work agenda or cultural sector: DCMI, for example, is a member of many metadata initiatives and several international standards organizations, such as the National Information Standards Organization (NISO) and the International Organization for Standardization (ISO); AMC is a member of numerous local, regional, and national music organizations.

Another affiliation is characterized as a "hosting relationship" between a DCHI and a larger organization that provides administrative or technical support to the DCHI. RLG has such a relationship with CIMI; ARL has this relationship with five organizations (including NINCH and CNI) that it refers to as "partners" and to which it provides various levels of staffing, management, and governance.

A less common—or perhaps just less-reported—organizational alliance is an unofficial one whereby a DCHI has a special, but undefined, relationship with an organization. Interviewees characterized these alliances as important for the opportunities, ideas, and assistance they provide. These types of alliances are hard to quantify, so their role and impact are difficult to discern.

Sources of Financial Support

Determining the funding sources for DCHIs is an inexact undertaking. Most DCHIs receive financial support from several sources. Some are able to report the exact percentage each financial source contributes to their budget; however, most can offer only ballpark estimates or relative assessments (that is, "X is our primary source, followed by Y").

The funding picture is further distorted for digital projects that are just one part of an organization's larger agenda. Such projects often receive indirect funding from grants made to the parent organization for a broader purpose. In these instances, it can be difficult to disentangle funding for the digital project from funding for the larger program.

Many of the surveyed organizations contended that the grant or foundation funds they receive for general support of their programs should be counted as funding for all the by-products they produce. However, inclusion of such "general support" tends to confuse the funding picture if one wants to determine which particular groups are interested in funding DCHIs. As a result, the following assessment takes into account only those funding sources that could be linked directly to a DCHI project, program, or organization. Although this approach may result in the inadvertent omission of a few funding organizations, it yields a clearer picture of "who is funding

what" than would the inclusion of all general forms of support.

The following financial sources, listed in order of most to least frequent, contribute to DHCIs.

Private Foundation Grants

Foundations are, by far, the largest financial supporter of digital cultural initiatives. The leaders among this group are The Andrew W. Mellon Foundation (directly responsible for funding 15 DCHI projects in this survey) and the Gladys Krieble Delmas Foundation (a supporter of at least four of the DCHIs in the survey). With the exception of these two sources, the other foundations listed below contributed to only one or two of the DCHIs.

The Atlantic Philanthropies
The Gladys Krieble Delmas Foundation
Sherman Fairchild Foundation
Ford Foundation
Bill & Melinda Gates Foundation
Getty Grant Program
The William and Flora Hewlett Foundation
The Samuel H. Kress Foundation
The Henry Luce Foundation
The John D. and Catherine T. MacArthur Foundation
The Paul Mellon Centre for Studies in British Art
The Andrew W. Mellon Foundation
The Pew Charitable Trusts
The Rockefeller Foundation
Alfred P. Sloan Foundation
Helen F. Whitaker Fund
H. W. Wilson Foundation
The Robert W. Woodruff Foundation

Public Grants

Grants from federal, state, municipal, and other local public agencies, as well as from public agencies in other countries, tie with membership fees (see below) as the second most frequent funding source for the DCHIs in this sample. Federal funding agencies such as the NEH and the National Science Foundation (NSF) provided the most support (eight and five DCHIs, respectively), but other agencies, such as the U.S. Department of Education, also provided support. DCHIs whose activities were closely aligned with or confined to a particular region (such as the Colorado Digitization Project) received assistance from small local agencies such as state historical or humanities commissions. Conversely, DCHIs with an international reach (such as the TEI-C) received funding from public grant programs in other countries or regions. The public granting agencies that provided support for the DCHIs in this sample are as follows:

Colorado State Library Association Library Services and Technology Act Grant
Directorate XIII of the Commission of European Communities
Institute of Museum and Library Services

National Endowment for the Arts
National Endowment for the Humanities
National Science Foundation
New York State Council of the Arts
New York State Department of Cultural Affairs
Regional Library Systems of Colorado
Rhode Island Commission for the Humanities
Social Science and Humanities Research Council of Canada
U.S. Department of Commerce Technology and Infrastructure Assistance Program
U.S. Department of Education

Membership Fees

Membership fees and dues tie with public grants as the second most important source of income. DCHIs that have both individual and institutional members tend to have relatively low membership fees (for example, less than $100 for individuals and less than $1,000 for organizations). Organizations that restrict their membership to institutions have fees ranging from the thousands to the tens of thousands (and in one instance, hundreds of thousands) of dollars.

In-kind Contributions

DCHIs receive substantial support from individuals and institutions that is not accounted for in financial terms but is offered in exchange for less tangible benefits (for example, a sense of supporting a worthwhile endeavor or synergies between organizations). The types of support included in this category are vast. For the DCHIs in this sample, in-kind contributions include provision of office space; technology support and infrastructure; digitization; financial, administrative and grant management; consulting; staff support; and data services. These contributions are provided by almost every entity imaginable: universities, other DCHIs, corporations, individuals, and parent organizations.

For many DCHIs, in-kind contributions are so significant that it is doubtful the initiatives could have developed without them. IATH offers an example of how extensive these contributions can be. IATH acknowledges the following in-kind support received from the University of Virginia, where it is an independent program in the university system:

- The Computer Science Department provided the initial impetus for the Institute, and its faculty and students have participated in a number of ways since then.
- Information Technology and Communication provided core staff for the Institute's first three years, and now provides significant assistance in Unix systems administration, NT systems administration, and Unix backups.
- The Libraries of the University of Virginia generously donated office space to IATH and its fellows. . . .

- The Office of the Vice-Provost for Research has provided temporary staff positions and occasional funding. . . .
- The academic departments that are home to the Institute's fellows have provided faculty release time and student research assistants.
- The College of Arts and Sciences and the School of Architecture have provided project funding beyond the initial fellowship year, in several cases. [22]

In-kind support is fraught with accountability challenges because it is notoriously difficult to itemize and assess. The inability to quantify this support in monetary terms tends to undermine its importance and value, relegating it to a footnote when in reality it may be the central tie that binds the DCHI. Unaware of the economic worth of in-kind resources, DCHIs are ill prepared to handle circumstances if they are withdrawn. They also cannot effectively use this support as evidence when funders seek tangible proof of outside financial commitments to a project.

Most survey participants spoke only in general terms about the in-kind support they receive. They noted it was critical to their organization but were unable to ascribe a value that would reveal its economic worth, should the resource need to be replaced. IATH is unique in acknowledging its in-kind contributions at the level detailed above, but even here the amorphous nature of this support is evident in statements such as "faculty and students have participated in *a number of ways*" or "IT . . . provides *significant assistance*" [italics added].

Corporate Support

A relatively small group of corporations lent support to DCHIs, and no one organization stands out as a leading contributor in this area. Nearly all support from technology companies came in the form of donations of hardware or software rather than monetary contributions. The corporations identified as providing support to the DCHIs in this survey include the following:

Alias Corporation
Apple Computer Inc.
Chrystal Corporation
AT&T
Enigma Software
IBM
Inso Corporation
Internet Multicasting Services
Inxight Software
Pattison
Sprint
Sympatico.ca
Sun Microsystems

Earned Income
Many DCHIs generate income from the sales of publications and print subscriptions, training and educational programs, data services, consulting, software sales, and, in one instance, the sale of surplus staff time. This earned income generally constitutes a small part of a DCHI's budget, although it is the one area that most DCHIs are looking to expand because they believe it holds great potential. Among the new areas of earned income being considered are publisher sponsorship of online reviews, repackaging of content for sale to different markets, fees for reports, fees for managing projects and strategic alliances, and data storage fees.

Endowments
Several organizations have endowments, but only seven of those surveyed reported using income from these endowments for operating expenses. The amount of endowment income used was not significant. A few organizations are just now creating endowments and are not sure how much income they can expect from them.

Licenses/Subscriptions of Electronic Resources
Those DCHIs with a digital library or database product often license that product to generate funds to sustain it. For DCHIs such as the History E-Book Project, AMICO, RLG, and the Women Writers Project, these fees constitute an important part of their operations budget.

Gifts, Donations, and Individual Contributions
A handful of the DCHIs receive contributions from individuals toward the support of a program or project. These contributions generally make up only a modest percentage of an organization's income. The circumstances that lead to individual contributions were not explored; however, one respondent indicated that individual donor or "friends" programs are difficult to maintain, do not yield enough income to make them worthwhile, and generally are distracting to a DCHI's work.

Conference Income
Five DCHIs named conference income, in the form of fees, sponsorships, and other contributions, as a very important source of support. For these groups, conferences generate a large infusion of cash that they use to help sustain them throughout the year. The income received from conferences is so important to these groups that they take special care to hold their conferences in cities that have "tried-and-true" reputations among their members, to ensure high attendance.

Government Appropriations
All U.S. public grant agencies are funded from government appropriations. CHIN, an operating agency of the Department of Canadian Heritage, receives earned income and sponsorships in addition to its government appropriation.

Other

Additional but infrequent sources of support include publishers, publication subventions, overhead from the administration of grants, contract income, and member assessments levied for special projects. A few DCHIs receive substantial income from sponsoring organizations, which are distinguished from members in that their contributions are made in support of the DCHI's mission and goals, with no expectation of benefits beyond the work accomplished by the organization.

Business Models

Types of Models

For the purposes of this analysis, the phrase "business model" refers to a unique combination of methods used by a DCHI to keep it sustainable. Most of these methods center on funding, broadly defined as how and where the DCHI gets the income it needs to pursue its agenda. However, business models also incorporate critical but less tangible methods of support, such as volunteer efforts or the leveraging of a "brand" or reputation.

At first glance it appears that there is great diversity in the business models used by DCHIs in this survey. Closer analysis, however, reveals that the diversity lies in the various combinations of funding sources used in these models rather than in the models themselves.

The simplest models are those in which an organization generates its income from a single source (usually foundation grants, membership fees, government appropriations, or "parent" support) and uses that income to cover all costs, including those of developing new projects or programs. Sometimes the model is extended to include two sources of income, such as membership fees and conference income, or includes special support—apart from the usual income source—targeted for particular projects ("restricted funds"). Volunteer-run DCHIs extend the model further, adding volunteer labor and skills into the equation.

Another common business model in this sample is a "subscription model," often referred to as such because income is generated from the sale of licensed subscriptions of a resource. In reality, the subscription model frequently includes other sources of support, such as membership fees, restricted grants, and in-kind services provided by host organizations or members. The precise mechanisms used in a subscription model can vary by organization. One organization may rely on its members to assume the costs involved in digitizing the content they contribute to the subscription resource, while another may assume these costs itself, with the assistance of outside grants. Some may forgo advertising, distributors, and royalties, while others incorporate one or more of these variables in their operations.

Some of the organizations in this study, such as ACLS, AMC, and AfA, have a business model that relies on a sophisticated mix of funding sources acquired through complex development and fundraising efforts. However, these models also rely, to an unacknowl-

edged extent, on a nonprofit version of "brand recognition." For example, CLIR receives diverse support from foundations, contracts, individuals, and sponsoring organizations that hold it in high regard and contribute to it with no expectation of direct benefits (beyond the work accomplished by the organization itself).

A variant of this model leverages brand name with in-hand support. IATH's diverse funding model is based on its ability to leverage the strong initial support it received from the University of Virginia, as well as the university's reputation, to generate millions of additional dollars of corporate, private, and foundation funding for its programs.

Another model relies on a decentralized framework in which a DCHI assists or enables other organizations to participate in a digital project by serving as clearinghouse and manager for the project's resources. The Colorado Digitization Project follows this model, which shows some evidence of becoming more common in the creation of regional-based digital cultural heritage programs. The CDP functions as a clearinghouse for efforts to digitize Colorado's cultural heritage collections and make them available online, redistributing grant monies for digitization to local cultural institutions, helping set project guidelines and standards, and serving as the grant-writing arm and coordinating facility for the project. The majority of this project's infrastructure needs and digitization efforts are handled locally by the initiative's partners (that is, Colorado cultural heritage organizations), so CDP can run a relatively lean operation that enables its partners to make their collections accessible in a shared, online environment.

A similar model is being used by the Online Archive of California (OAC) and a large archival digitization project under way in North Carolina (Exploring Cultural Heritage Online [NC ECHO]).[23] Like the CDP, these projects provide statewide frameworks for digitization of cultural resources, offering a range of support to help local cultural organizations digitize their collections and contribute them to a freely available digital collection of state-based resources. As one interviewee pointed out, most small cultural organizations would never be able to bring their collections into the digital world if it were not for this kind of model, because it allows them to "hitch their wagons to another digital star."

The particular strategy used to implement a business model is critical. RLG, for example, has had a fairly stable business model throughout its history, and credits its implementation strategy as key to its success. RLG's model is to generate revenues in excess of expenditures over a period of years, then use those accumulated earnings to fund new programs that will generate excess revenue, thus creating and continuing a cycle of support. In pursuing this model, RLG is very careful about the commitments it makes. Every new program or service must have a distinct business plan, milestones with triggers that make them reconsider support of the program or service at various phases, and an exit plan that would be used if the organization decided to drop the program. RLG credits this strategy with keeping the organization profitable and viable over the last 18 years.

Changes to Models

Business models are malleable concepts, as borne out in the changes that the DCHIs in this survey have made to their models in response to growth, experience, and market realities. For example:

- CHIN has altered its model several times in the course of the past 30-plus years in response to technology changes and members' needs. At its inception, CHIN focused on the single objective of creating a centralized national inventory of Canadian cultural heritage collections. It then moved to a distributable model when personal computers became ubiquitous. In 1996, it changed the model again, by moving all its resources onto the Web and removing all restrictions on access.
- IATH's original business model called for outside consulting revenue to "feed" the organization's programs. The University of Virginia's (UVA's) provost discouraged IATH from doing this, offering instead to provide IATH with a budget line and removing the expectation of self-funding from the program. IATH used this upfront investment to raise significant outside funding—several times greater than the initial UVA investment—from private and public foundations and grants.
- ARL has recently altered its model to create capital for research and development projects. ARL members that face a common problem contribute additional funds toward a project that addresses that problem and poses possible solutions. By pooling resources in this manner, ARL can pursue new projects without taxing existing resources. (ARL recently used this strategy with 24 members who funded a special study that helped develop metrics for the electronic resources in their institutions.)
- TEI-C and WWP changed their business models in response to the pressures of growth and maturity. The former moved from a grant- and foundation-funded initiative to a membership consortium; the latter moved from corporate, grant, foundation, and in-kind support to a subscription licensing model that had been part of its long-term plan.

Financial Management

The DCHIs in this sample manage their financial resources in one of the two following ways.

In-House Management

Twenty-eight of the DCHIs surveyed manage their own finances. The resources available to do this vary, and organizations often supplement their financial management with some outside professional assistance for audits. Volunteer-run organizations rely almost solely on their board treasurer to keep the books, pay the bills, contract with an auditor, and perform other necessary functions. Organizations with paid staff often delegate this work to a particular staff member, such as a financial administrator. Organizations with endowments administer their day-to-day finances in-house, but use the services of a financial brokerage firm, in concert with the board,

to manage endowment fund investments.

The federal granting agencies have their own in-house accounting and financial management staff, but receive considerable oversight and must comply with stringent federal regulatory requirements. CHIN, a Canadian government agency, operates under parallel circumstances in Canada.

External Management

A small proportion of the DCHIs rely on external sources to manage their finances. This support may come from a university, another organization that has a "parent" relationship with the DCHI, or an association-management company. Financial management may be offered on a fee-for-service basis or may be an in-kind contribution.

Not all university-based DCHIs rely on their university host for financial management. DCHIs that have an independent relationship with their university (such as IATH at UVA and the Berkman Center at Harvard) manage their own finances, using only the university accounting structure to assist them. DCHIs that are part of a specific university department (for example, a digital library or scholarly technology division) tend to rely heavily on that division or department to manage their finances.

Sustainability Issues

Survey participants were asked about issues they faced in "achieving and maintaining sustainability" for their organizations or programs. While the questions were asked separately to draw out distinctions between becoming sustainable and continuing to remain so, it soon became apparent that there were no such distinctions. The issues discussed in response to both questions overlapped considerably. Furthermore, many of the organizations participating in this survey have not yet reached a sustainable state (as one interviewee quipped, they "have hovered on the brink of sustainability" since their founding), making questions about "maintaining sustainability" irrelevant. For these reasons, issues that compromise "achieving and maintaining sustainability" are presented here as one. They are presented in the order of frequency in which they were cited.

The Economy

The current economic downturn was a near-universal lament among survey participants. It is affecting all areas of these organizations' operations: endowment value (and income) is decreasing; memberships are declining as a result of budget cutbacks at member institutions; dues cannot be increased because members are feeling a financial pinch; enrollments in revenue-generating programs such as conferences and workshops are lower; and fund raising is more difficult because foundation endowments are doing poorly and corporations are tightening their belts. Participants detected a "cooling" in all markets, but felt it was especially acute in the education sector.

DCHIs that are collaborative or consortial ventures noted that large organizations, which are usually the stalwart members of these

projects, can no longer participate as readily as they did in the past. Many felt that new consortial projects are going to be very difficult to start up at this time. DCHIs transitioning from startups to established projects are also finding it is a risky time to change business models to reflect their more mature organizational status.

Another sobering effect of the economic downturn is its impact on creative endeavors in the digital cultural heritage arena. Collaborative efforts to produce networked, community-wide cultural resources have stopped dead in their tracks, and few new efforts are being initiated. Moreover, new program development *within* DCHIs has slowed substantially. Some organizations are holding back because they are concerned about launching a new program in uncertain fiscal times, while others have sustained across-the-board budget cuts that make new program development impossible (except at the expense of an existing program). The apparent moratorium on new digital projects will affect research and development in humanities computing and will slow the pace of placing cultural content online. The long-term impact of this is difficult to determine, but it comes at an inopportune moment—namely, a time when more people are looking for, and expecting to find, scholarly and cultural information online.

Funding and Foundations

Many survey participants expressed concern about the effect that the current market situation will have over the next several years, even if the economy improves overnight. Many of the DCHIs felt they could "ride out" one bad year, but they would find it very difficult to continue if the economic downturn continued. In anticipation of a hard road ahead, DCHIs that rely heavily on foundation support are exploring ways to diversify their funding base, although many admit they are not certain how to do this. Income diversification takes time; substantial planning must be done before one can reap results. DCHIs that have not yet started planning are particularly at risk.

Other factors are at work in the funding arena. Chief among these is an alarming trend among foundations to discontinue their arts programs. These changes mean less foundation support is on the horizon, even when the economic climate improves. Some survey participants felt this trend was a clarion call to the community to start proactively "growing" future funders who could make up for this loss.

Survey participants were critical of foundation funding strategies. They noted, for example, that foundations are very willing to give seed money for projects but unwilling to provide general operating support to sustain those projects once they are up and running. Foundations were also taken to task for being collections-driven, rather than user-driven, in their funding. They were thought to be "behind the curve" in understanding digital humanities projects and needs. The time between submitting a proposal and receiving a grant was deemed too long for digital projects. Respondents commented that this lag, which is particularly long with federal grants, preclud-

ed organizations from responding to an emerging digital initiative in a timely fashion.

Finally, there was a concern that DCHIs that rely heavily on grant support often find themselves being driven by where the money is rather than by their own strategic plans. While acknowledging the realities of grant and foundation funding, respondents stressed that DCHIs must strike a balance between funders' priorities and their own. In the end, foundation support, despite its uncertainties and demands, is a critical part of DCHIs' long-term plans, because the DCHIs own constituencies (particularly artists or scholars) can never be expected to support these initiatives on their own.

Operationalizing Digital Initiatives in Cultural Institutions

After funding and economic issues, the next perceived threat to sustainability was the failure of cultural organizations to treat digital cultural heritage projects as a permanent part of their overall institutional operations. There is a prevailing sense that cultural institutions rush toward digital project development without considering the burdens these projects will place on budgets, staff, and time. Digital initiatives are treated as "special projects" rather than as long-term programs. This shortsightedness leads to inadequate financial resources, the lack of a long-term plan for sustainability, and huge burdens on existing staff.[24]

DCHIs have now existed for a decade or longer, and their prevalence is challenging institutional perceptions and management. Unfortunately, there are few signs that cultural institutions are making the necessary adjustments. Responding to fiscal pressures induced by the current economy, cultural institutions are ignoring the larger problem of how to properly manage digital projects. They are cutting back on training funds at a time when training is more critical than ever, and they are pressuring their staffs to take on digital projects without any additional resources.

Of particular concern was the burden these projects are placing on staff members who struggle to carry out their ongoing responsibilities while taking on demanding new ones. The ramifications of overwhelming workloads are being felt even outside individual institutions. For example, one DCHI representative noted that the organization's volunteer base was dwindling and blamed it directly on the local digital projects that its members now must administer in addition to their previous responsibilities. As a result of these growing demands, these members can no longer offer their time and expertise to their profession. In effect, digital projects are rendering professional colleagues less available to offer assistance at the very time when that assistance is more critical than ever because cultural institutions themselves are not providing it.

Clarifying Organizational Missions and Domains

There is general agreement that the time is ripe for DCHIs to reassess and clarify their missions. The cultural community as a whole has become more engaged and knowledgeable about these projects,

and DCHIs need to consider how they can best serve the community today. The Association for Computing in the Humanities (ACH), for example, has found that its mission—to encourage and support humanities computing—is not as critical as it once was, now that humanities computing is more prevalent. Consequently, ACH is reassessing its mission to more accurately address the contribution it can make in today's digital landscape.

The proliferation of DCHIs has led to considerable overlap in the missions of various organizations and created confusion in the cultural community. Several participants are finding that potential members, when considering where to place their limited resources, now ask how their organization differs from "organization XYZ." One interviewee disappointingly noted that his DCHI was now defining itself less by its mission and more by how it compares and contrasts with other groups. This situation makes it increasingly difficult for the DCHI to articulate its unique offerings and not stray from its intended purpose.

There also was a sense that the missions of some DCHIs are not fully developed or have not been adequately translated into objectives. As a result, too many DCHIs lurch from idea to idea without guiding principles. They emerge with great passion, but are unrealistic about their capability and capacity in terms of staff and economics. Some culling of these DCHIs was felt to be appropriate; however, this action will be difficult to undertake, because "passion" often persuades members and funders to keep assisting a DCHI as it struggles from one program to the next. One interviewee felt that stopgaps were needed to allow unsuccessful DCHIs to cease operations in a dignified manner; otherwise, these projects might linger for years, draining resources to no avail.

DCHIs also expressed concern about how they can explore new opportunities without losing focus and straying from their mission. Many new opportunities are moving precariously close to commercial ventures, jeopardizing the DCHIs' nonprofit purpose and status.

Finally, organizations that deal peripherally with DCHI issues wonder how they can enter the arena more directly. What niche can they fill? Without knowing "who does what" in the current environment, one institution expressed hesitancy in delving into this area because it was uncertain about the role it could play and the contributions it could make.

Standards, Practices, and Preservation

There are many community-wide standards issues that affect sustainability. Initiatives that rely on museum collections note that one of their greatest sustainability problems is rooted in the heterogeneous recording practices that plague the museum community. These different practices translate into huge editing and integration costs when trying to bring museum information into a digital library. Such costs cannot be minimized until the museum community reconciles its myriad local practices through content description and documentation standards.

Standards issues hamper other digital projects as well. The electronic publishing community is struggling with standards for e-books, numbering schemas for online books, and metadata and file format standards. Until these issues are resolved, projects currently under way risk obsolescence or require frequent, costly migrations.

A concern that crosscuts all sectors was the lack of digital preservation standards and policies, particularly the uncertainty about long-term preservation and archiving strategies for digital products. Preservation and archiving efforts are seen as dispersed, leading one participant to suggest that an "archiving czar" is needed to lead a coordinated effort in this area. At a local level, DCHIs are clearly becoming overwhelmed with archiving their digital resources, finding the time, storage space, and procedures and migration efforts extremely costly. No electronic archiving budgets exist for these projects; many DCHIs did not realize the costs would be so great as to require one.

Increasingly, DCHIs are looking at external sources for long-term preservation and archiving of their resources, realizing they cannot continue to do this on their own. But who should be the trusted repository? Libraries and publishers were the most frequently cited candidates, and DCHIs are hoping that these organizations will collect and sustain humanities computing projects once they reach a certain established state. IATH has taken a proactive stance on this front, initiating discussions with the University of Virginia Libraries and Press to examine how to collect and sustain born-digital humanities resources.[25]

On a policy level, the lack of knowledge management policies and procedures in cultural institutions was cited as a threat to sustainability for any digital resource. In the absence of such policies, digital resources grow into unwieldy projects that are costly to manage.

Business Models

DCHIs lack proven, sustainable business models. Despite a great deal of experimentation, no one is certain which models work. Even a model that appears successful in one circumstance may not work in another equivalent situation. For example, the decentralized model used by the CDP was rejected by H-Net, which started out with a distributed model but soon found that it needed a centralized system to ensure a technology hub for new projects, to control the technology infrastructure, and to streamline administration.

DCHIs faulted many business models for their failure to provide access to capital for the development of new projects. With no surplus funds to use for research and development, anything outside "business as usual" is not possible. Current business models also do not provide for funding of ongoing investment areas, such as electronic archiving.

Finally, there was a sense that the collaborative model for problem solving was becoming less viable for DCHIs in today's economic climate. No one is certain what the price point for this model is. How

much are people willing to contribute to solve a problem collaboratively? DCHIs and their members consistently underestimate the costs of large-scale collaborative projects; as a result, collaborations unravel before any results can be achieved or find themselves scrambling for funding late in the process.

Growing Pains

Transitional phases for DCHIs, such as when they are moving from startup or experimental projects to maturing programs, are periods of intense stress and high risk. A maturing program needs to develop a structure to permanently oversee and house its activities and to formalize governance for this new structure. Identifying the right structure and moving the organization into it is, as one interviewee described it, a "delicate task." It involves radically changing the way one does business while taking care not to alienate those who supported or nurtured the initiative to its current state.

Scale of growth is another issue. Some DCHIs rapidly exceed the resources their parent organizations can be expected to provide. H-Net is a vivid illustration of this: it is searching for a way to keep access available to all its digital content, which is growing at a phenomenal rate. Increased storage capacity, programming, and frequent migrations are necessary, and all three needs are very costly. Even H-Net's stable university environment cannot be expected to sustain this expanding resource. Alternative models of funding will need to be sought.

The growth phases of DCHIs and the costs at various stages of that growth have yet to be studied in depth. IATH has observed that its scholarly projects have a distinct life span that requires different resources (for example, funding and staff) and activities (for example, grant writing, planning, implementation) at different times. Each IATH project takes about six to eight years to become viable. At that point, the digital project needs to be turned over to another entity for continued sustainability and persistence as a scholarly resource. Further study is required to determine whether other digital projects follow this pattern.

The Online Intellectual Property Miasma

The issue of access to intellectual property (IP) is a formidable problem, especially for DCHIs that incorporate sound or images in their digital resources. Some DCHIs, such as AMICO, have worked out unique licensing arrangements with artists' rights agencies, but for many DCHIs the problems are more complicated. The prevailing sentiment among image rights holders is to license electronic rights to image resources on a renewable basis, but this presents an untenable situation for DCHIs. They cannot administer thousands of different licenses and, more broadly, they question what nonperpetual licenses mean for persistence in a resource where images are integrally tied to text.

A case in point is the archiving of image-laden publications in electronic archives. Prime among these are art and art history jour-

nals, art history doctoral dissertations, monographs, and *catalogues raisonnés*. At the time when these works were published in print, the publishers may or may not have cleared permission for electronic format archiving. Depending on the format of the archive and the copyright status of the images, rights may be in question. Authors, publishers, and archives now face the daunting task of assessing what new rights may need to be obtained—and, worse, they may need to track down all the original rights holders for both the artworks and the photographs of the artworks. In addition, if rights must be cleared, either the publisher or the electronic archive needs to consider how it will administer thousands of unique license arrangements, many with term limits and recurring costs built in. Few nonprofit organizations (publishers, museums, archives, authors) can manage a workload of this kind, yet having the images embedded in the text in the electronic archive is critical to art historical scholarship and to accurate archiving of the discipline's publications.

Another IP question arises with ownership of resources developed by a consortial group of volunteers. Who, for example, owns the IP in a digital standard that was developed by a community of volunteers? And what happens when that standard work moves into a formal initiative, where it becomes that initiative's primary asset? Few, if any, volunteer consortial initiatives have considered the IP implications or addressed them at the outset via formal written agreements. As a result, when these projects mature to the point where the initiative must be formalized, IP issues come to the fore and prove to be a significant impediment to the transition process. The TEI-C faced this predicament as it moved from a loose coalition of scholarly organizations and editors to a membership-only initiative whose primary asset is the TEI Guidelines.

Internal Tensions

DCHIs housed in a larger parent organization report a constant tension between DCHIs and their parent institutions. Sometimes the tension is caused by the parent's apparent lack of interest in the special needs of the DCHI. Or there may be a lack of clarity about the role of the DCHI within the parent organization and with any of its affiliate units. At other times, the tension stems from competition over programs (the DCHI being but one of several programs within the parent organization), resource allocation, or financial management.

In large, established DCHIs, the tensions may crop up from the organization's own agenda. An interviewee from one DCHI cited a persistent pull between its dual roles as a provider of goods and services and as a collaborative venue or facilitator. Another source of tension is differences of opinion among board members or among the membership. These disagreements often arise when an organization debates whether it is the right time to move from volunteer to professional management. Finally, organizations experience internal tensions when determining asset allocation—what one interviewee described as "the constant question of where is the best place to put our financial resources."

For DCHIs whose core mission is the development of a scholarly resource, there were concerns about inevitable staff changes and what they mean for the initiative and its position within the parent organization. It is difficult to reconstitute the intellectual experience that brings digital scholarly resources together, and when a key staff member leaves, the dynamics of the project and its political position in a larger program may alter dramatically.

Increasing Competition

The value of digital content is creating competition for DCHIs in both commercial and nonprofit venues. The commercial sector is realizing that even old content made available online can be valuable, and many feel it will not be long before commercial ventures directly compete with existing DCHI offerings. Within the nonprofit cultural community, some individuals noted that larger and better-financed nonprofits already are competing with smaller DCHIs.

The increase in numbers of DCHIs was seen as another form of competition. DCHIs that function as "umbrella organizations" for a particular cultural sector are finding that increasing numbers of smaller, single-purpose groups are now competing with them for members. Again, there was the call for culling and, where appropriate, integration of some of these groups. One interviewee, in discussing the proliferation of DCHIs, noted that the community is now in a "collaborative age of single-purpose groups."

Competition also comes from the ever-increasing number of freely available online resources. In such an information-rich environment, the value of any particular DCHI product is likely to be diluted.

Uncertain Market Needs

Many DCHIs burst on the scene with no knowledge of user interest levels or of what it would take to enlist collaborators and partners. They often found that their targeted constituency and partners were wary about the validity and benefit of their project or product. Publishers were cautious about participating in DCHIs involving electronic publishing because the intellectual property and economics of the endeavor were uncertain. Scholars were hesitant about creating born-digital monographs because their value in a tenure evaluation was unknown. Museums were slow to participate in standards collaborations or union database projects because they required the investment of huge amounts of resources but offered no immediate or near-term benefit.

Hand-in-hand with uncertain interest levels was an absence of knowledge about user needs. Many projects found their usage was much less than anticipated. Even now, most DCHIs feel that no one really understands what users want, despite a recent increase in studies of user needs.

International Issues

As North American DCHIs grow, a few are entering the international arena, where they are confronted with new sustainability concerns. The most difficult issue is the various legal regimes that must be addressed when moving to an international stage. TEI-C, for example, discovered that the U.S. nonprofit model it wished to operate under had no equivalent in the European Union (EU). Consequently, in order for TEI-C to establish itself as a legal international organization, the group's bylaws and constitution had to be debated, rewritten, and vetted by international lawyers.

There are also philosophical differences between European and U.S./Canadian cultural organizations that pose problems for a DCHI wishing to conduct business in the EU. European museums, for example, have no tradition or precedent for paying for services that are not mandated by their government's cultural ministries. These ministries feel that any digital resource developed with even a partial contribution of public funds should be available free of charge. The European cultural community was described as "having an aversion to revenue generation," which makes it hard for North American DCHIs whose business models include this income source to make inroads in this community.

Board Development

Some survey participants felt that DCHIs need to recruit more corporate board members, because such individuals can bring resources to these organizations that membership-based boards cannot. These individuals were not advocating for all-corporate boards, but rather boards that had some corporate representation. They saw this as a way of cultivating leaders in corporate America who could support their endeavors and as one strategy to "grow" funders at a time when the fund-raising horizon looks bleak.

Clarifying Digital Cultural Heritage's Value to Society

DCHIs feel they have not clearly articulated their purposes and goals to the public. The often arcane and abstract nature of their projects makes it difficult to present them in a way that is compelling to a nonspecialist. Many believe this failure is directly responsible for the relatively poor attention these projects command in the funding world. An interviewee knowledgeable about the funding arena estimated that less than 13 percent of all funding in the United States is designated for the cultural sector, and funding targeted toward digital cultural heritage represents only a fraction of this amount.

One reason cited for the inability of DCHIs to demonstrate the importance of their efforts was the absence of supporting metrics that prove the value of their resources to a broader public. Another reason was that DCHIs fail to promote their efforts outside their own narrow community of users.

Straddling Two Worlds

Some DCHIs felt that lack of holistic thinking about the digital world created a broad impediment to sustainability. The prevailing mind-

set was described as "paper first, digital second." While all DCHIs are hampered by the need to straddle the analog and digital worlds, these two worlds have distinctly different needs, and cultural organizations were accused of planning the digital through an analog lens.

Costs of Technology Resources
DCHIs routinely underestimated the costs and work involved in developing and maintaining technology resources. They are confronted with a pressing need for more capital for technology maintenance and growth.

Leadership Changes
A few DCHIs felt leadership turnover presented significant problems in membership retention. If an institutional member had a newly appointed chief executive officer whose agenda did not match that of the DCHI, the institution would withdraw or fail to renew its membership. Others were less concerned about this issue, feeling it was a zero-sum proposition, because new leaders were just as likely to bring potential members to the DCHI as they were to take them away.

Hazards of Being "First on the Block"
The DCHIs that were among the earliest in their discipline to develop a digital cultural product or program often followed a circuitous path in the development and implementation of these projects. They "had to make it up as they went along," experimenting constantly and failing frequently. Inexperience with starting and managing digital projects led to redundancy and wrong choices that often complicated the DCHIs' efforts to achieve sustainability.

The Political Landscape
The current political climate was portrayed as unfavorable to the digital world and cultural heritage. One participant noted that the priorities of the current presidential administration make it hard to get national attention for any sort for cultural activities, and felt that this state of affairs would not change until a new administration was in place. Another pointed out that federal grant agencies are at constant risk of changes to their agendas because of administration politics and appointments, which makes for an unstable federal funding environment and uncertain support of cultural heritage initiatives.

Becoming a Sustainable Organization
Several DCHIs whose fiscal and programmatic health is stable or thriving offered their ideas on the critical components for sustainability in any organization. Key among these was the belief that all digital projects or programs should have well-defined, discrete objectives with measurable goals that can be used to determine success. For many, this takes the form of a separate business plan for every project undertaken.

Timing was a second critical factor. Developing a product or

program when the market or community shows high interest and demand minimizes the risky proposition of trying to drum up support or sell the idea. Survey participants offered examples of organizations or projects with good ideas but bad timing; in most cases, the problem was the proverbial circumstance of being "ahead of one's time."

Continual organizational reassessment—defined as review, self-critique, and realignment—was deemed critical to ensuring that DCHIs deliver value over time. The core issues of these initiatives need to be "reengaged" over and over again to address new needs, demands, technology changes, and audiences. Failure to do this means a DCHI will eventually fall out of step with the evolution and changes in its environment.

Part III: Review of Funders of Digital Cultural Heritage Initiatives

To examine the issue of sustainability from a DCHI funder's perspective, representatives from the following five private and public funding organizations were interviewed:

The Andrew W. Mellon Foundation
The Getty Grant Program
The Institute of Museum and Library Services
The National Endowment for the Humanities
The National Historic Publications and Records Commission

Representatives from these agencies were asked about three major topics: (1) what they are funding in the area of digital cultural heritage and why; (2) the level of monetary support they are making available to these initiatives; and (3) how they evaluate the sustainability of these projects.

Reasons for Funding DCHIs

The motivations for funding DCHIs are varied. The Mellon Foundation, for example, does not view itself as a funder of DCHIs; rather, it sees digital cultural heritage activities as a by-product of its mission to support scholarship and the development of scholarly resources. Mellon denies many requests for digitization of cultural materials because they do not address this larger purpose. If a proposed project does include digitization, it must demonstrate that the digitization is fueled by specific research projects whose goals cannot be achieved without the development of digital resources.

A different perspective exists at the IMLS. As the only federal agency with statutory authority to support digitization, the IMLS views this authority as a mandate to support digital cultural heritage initiatives undertaken by museums and libraries. The NEH Division of Preservation and Access[26] also strongly supports these initiatives in the broader arena of humanities computing. It is particularly

interested in funding projects that will increase the capacity of the nation's cultural institutions to digitize their collections and maintain access to these holdings over time.

Funding Support

Support for DCHIs comes from traditional monetary awards and from nontraditional means (for example, sponsorship or participation in collaborative programs). It is impossible to determine how many dollars funders allocate to digital initiatives, because foundations and agencies track their support by their own program categories and not by broader categories such as digitization per se. For example, the IMLS supports digitization through many of its individual program categories and under its State Grants Programs.[27] For 2001, the IMLS estimates that about $6 million went to support digitization through its National Leadership Grant Program ($1.5 million in Library and Museum Collaborations, $1.5 million in Museums Online, and $3 million in Library Preservation of Digitization). Estimates for its other programs could not be easily determined.

Support also is given in other ways, such as sponsoring or participating in a collaborative program, developing "best-practices" guidelines, or hosting a specific project. For example, the Mellon Foundation has provided funds to create and "incubate" two organizations that are responsible for scholarly resources in digital form: JSTOR and ARTstor. JSTOR is now an independent entity that is supported largely by contributions from participating libraries, although it continues to receive grants from the Mellon Foundation and others for special activities such as the digitization of select journals. ARTstor currently is part of the Mellon Foundation (it is scheduled to launch as an independent initiative in 2003) and is developing content through Mellon Foundation grants made to university libraries and museums that are digitizing materials to be included in the ARTstor collections. The foundation initially hosted these two initiatives because it felt they were of sufficient breadth and depth to benefit from the foundation's unique resources, and because the foundation believed that, in establishing these organizations, it could play an important role in mediating the diverse interests of the scholarly community, academic institutions, publishers, and museums, libraries, and other repositories.

Apart from grant awards, the IMLS's latest efforts to support digital initiatives are its annual Web-Wise Conference on Libraries and Museums in the Digital World (its 2003 conference theme was "Sustaining Digital Resources") and its support of workshops that identify opportunities for research on the creation, management, preservation, and use of digital content.

Another example of an innovative, nontraditional means of support was NEH's Division of Preservation and Access partnership (in 1999–2000) with the National Science Foundation's Digital Library Initiative Phase 2 (DLI-2) program to fund complex humanities-based computing projects. During the two-year period of this collab-

oration, the NEH contributed more than $2 million to the 11 awardees in this program. (The NSF contribution totaled $14 million.)

The Impact of the Economy on Funding Sources

In the survey of DCHIs, organizations that rely on foundation grants commented that the market decline has decreased the value of foundation endowments and thus the amount of monies available for funding. The Mellon Foundation had to reduce its 2001 grant-making budget from $210 million to $180 million because of a drop in the value of its endowment. In 2002, the grant-making budget was $185 million. The foundation has been discussing future funding strategies, which are aimed at "deepening, rather than broadening" current grant-making activities.

The grant-making budgets of the public funding agencies are influenced by economic and political forces that affect the federal budget rather than by endowment income, which is subject to market volatility. For fiscal year 2003, the public agencies are being funded at approximately the same (for IMLS, slightly higher) levels than for fiscal year 2002.

Evaluating and Encouraging Sustainability

The foundations and agencies have implemented many different strategies for evaluating and encouraging sustainability of the projects they support. The Mellon Foundation assesses project sustainability, in part, by asking grant applicants to demonstrate demand for their project. In the foundation's experience, projects that fail to sustain themselves do so because there is little or no demand for the products they generate. The foundation often uses the market studies it has commissioned in the past to assess demand for a particular project, or requires the development of a business plan with a careful assessment of demand as part of the planning phase for a project. The foundation's staff also relies on scholarly opinion to verify the significance of a project within a field, and often requires that a prominent scholar lead the project or be significantly involved in its development.

The IMLS evaluates all grant applications through a peer review process. Relevant evaluation factors for sustainability include the applicant's institutional support, as demonstrated through cost sharing, and the institution's infrastructure to support digital resources. Applicants for digitization funds are required to submit a form entitled "Specifications for Projects Involving Digitization," which includes information on plans for preservation and maintenance of the digital files after the expiration of the grant period. To further encourage sustainable practices, the IMLS supported the creation of a document entitled "A Framework for Guidance on Developing Good Digital Collections,"[28] which is provided as a resource to help applicants plan and implement digital projects.

The NEH is trying to foster sustainable projects by urging ap-

plicants to follow best practices and by requiring that all grantees formally commit to ensuring access over time to digital resources created with the endowment's funds. To help applicants, the Division of Preservation and Access developed a narrative section in its guidelines[29] that outlines the issues applicants should consider when they undertake a digital project. The Division's specialist reviewers and panels use this section as a general benchmark for a proposal's evaluation.

While the NHPRC supports research on the long-term preservation of electronic records, it funds very few projects involving digitization because it feels long-term sustainability is still a moving target and the subject of further research. It does require grantees in its Documentary Editions program to "design their project for the electronic environment," but does not specify what that design should be.

Special Sustainability Initiatives at Public Funding Agencies

Several of the public funding agencies are undertaking projects or collaborations that address sustainability issues in a community-wide context. The IMLS is currently funding several National Leadership Grant projects to investigate issues such as preservation and sustainability of digital resources. One of these projects, at the University of Illinois, Urbana-Champaign, will gather data from more than 100 IMLS-funded digital projects as part of its work to create a collection-level registry and item-level metadata repository.[30] This project will provide information on the continuation and sustainability prospects of projects funded by IMLS since it began awarding digitization grants in 1998.

The NHPRC is actively observing the landscape of digital preservation efforts, and is supporting research and development projects that look at, among other things, markup standards as a way to make archival documents more sustainable in a digital environment. One particular NHPRC-supported project, entitled "Model Editions,"[31] marked up various documentary print editions in different formats, and NHPRC is now considering how to follow up on this work. One of the original objectives of the Model Editions project was a digital library that included the published volumes of NHPRC-supported editions.

The NEH's Division of Preservation and Access believes preservation is "access over time," and to that end hopes to further preservation efforts through collaborations with other federal grant agencies. The Division believes that such efforts fuel synergies that can move research forward in a way that individual agencies cannot. The Division cites its two-year collaboration with the NSF's DLI-2 project as an example of how the NEH was able to bring humanities projects to the attention of information scientists. Intrigued by the complexity of research issues, the NSF joined with the NEH to fund (at very high levels) several projects that explored "big issues" in the field of humanities computing. The Division feels that collaborative efforts may

be the most effective way federal agencies can create a research and development platform that significantly contributes toward making digital resources more sustainable.

Part IV: Recommendations

The senior administrators who participated in this survey offered numerous suggestions for strengthening and making DCHIs more sustainable. The following recommendations are a synthesis of their ideas and of common themes and issues that arose in the survey.

Planning and Marketing

Recommendations

- Conduct needs assessments, market analyses, or some other appropriate research prior to formally establishing a DCHI, in order to identify audiences, clarify opportunities, and determine the nature and form the DCHI should take.
- Develop a business plan as soon as the idea for a DCHI becomes viable; revisit the plan at various intervals throughout the life of the DCHI.
- Create a separate business plan for each new initiative or program a DCHI undertakes. These plans should identify strategies and measurable criteria for determining success, specify time periods when projects are to be reevaluated, and include exit strategies if programs need to be dropped.
- Develop knowledge management and intellectual property policies for the DCHIs, so the assets of the initiatives are clearly identified and managed.
- Recruit more corporate board members to encourage new perspectives and foster future philanthropy.
- Market DCHIs and their products and services aggressively to the digital cultural heritage community.
- Promote DCHIs to the public.

The underlying objective of these recommendations is to make DCHIs more accountable and well planned and thereby reduce the uncertainties they face from one year to the next. Survey participants felt that DCHIs are often poorly developed entities. They emerge from a perceived sense of need rather than from factual knowledge (such as that provided by market research or a needs assessment) and frequently do not have formal, written business plans. When developing new programs, they rarely have a business strategy in place to implement these programs and monitor and evaluate their success. This lack of planning from inception through establishment results in ill-defined financial, human resource, and program needs.

DCHIs also must raise their visibility among the public and the specific communities they wish to serve. They need strategies (such as public and private partnerships and marketing plans) to attract

and develop audiences. In the absence of such strategies, they risk dilution in an environment where they cannot be distinguished from the plethora of other information resources.

Training

Recommendations

- Train executive directors, managers, and other administrative personnel of DCHIs in project management, business plan development, market and needs assessments, and financial management for nonprofits.
- Develop technology training for practitioners and implementers of DCHIs that is tailored to the cultural community and using cultural heritage content.
- Develop leadership training for senior administrators of cultural institutions to increase awareness about the nature of digital cultural initiatives and the need to integrate these projects into the operations of the institution.
- Conduct a survey of digital cultural heritage training programs to clarify what is currently available to the cultural community, what gaps exist and who might best fill them, and what obstacles make it difficult for people to take advantage of training opportunities.
- Create an online, edited directory of digital cultural heritage training resources for the cultural community.

To implement the planning recommendations outlined above, more training is needed in the areas of management, technology, and leadership for managers and practitioners. Some training is offered in academic programs, ad hoc workshops, and seminars given at conferences but there is no clear understanding of the extent of training that is available, who offers it, how they offer it, and whether it is adequate.

Integration and Culling

Recommendation

- Conduct a meeting of stakeholders to discuss how DCHIs can be better positioned with respect to one another and to other digital projects. The meeting should address the need to clarify mission statements and audiences, minimize overlap and redundancy of activities, integrate organizations and explore new efforts under way to do so, and identify each organization's intent in a particular domain.

A prevailing theme among interviewees was the need for "culling and integrating" in the digital cultural heritage community. Participants felt there was too much confusion about "who was doing what" among their own constituencies and the public at large. The process of phasing out some DCHIs was thought to be critical, albeit difficult. DCHIs emerge from a strong passion that tends to

keep them alive longer than may be fruitful, and no tradition of exit strategies exists for their dissolution. The process of integration may be somewhat easier, in that it has advantages from the sustainability viewpoint of individual DCHIs. Integration can leverage resources, bring about economies of scale, and produce synergies among programs and members.[32]

Stable Repositories for Digital Cultural Resources

Recommendation

- Conduct a study of universities, publishers, and other repositories of digital cultural resources to examine how they acquire and manage these materials, the issues involved in doing so, and their suitability as long-term repositories for digital cultural resources.

DCHIs that produce a digital product need to create an infrastructure to house and maintain that product or they need to partner with another organization or institution with such an infrastructure. Participants in this survey clearly preferred to view universities or publishers as long-term repositories for digital cultural resources. (Within universities, scholarly technology programs or digital library production departments are favored choices.) Nevertheless, no one knows how viable these repositories will be in the long run. Are they actively or passively accepting this role? How are they collecting and sustaining born-digital resources? Will there be a limit to the number of projects they can handle?

Institutions and organizations that are serving as repositories of these resources need to be examined more closely, so that the decision to transfer one's resource or to partner with a repository can be made in good confidence.

Fostering Communication Between DCHIs, Funders, and Their Cultural Heritage Constituency

Recommendations

- Create opportunities for discussion between leaders of the funding community and DCHIs to try to align the sustainability concerns of the DCHI community with the interests and capabilities of the funders.
- Conduct a survey of the cultural heritage constituency to understand what it needs or expects from DCHI products, services, and organizations.

The discussions with DCHIs and funding agencies revealed a partial mismatch between the sustainability needs and concerns of the two groups. The federal funding agencies are addressing sustainability issues by investigating long-term research problems in humanities computing and technical solutions to the problem of sustainability of data sets, as well as encouraging best practices. DCHIs acknowledge the importance of these areas, but are equally con-

cerned about other problems that affect sustainability: for example, organizational dynamics, growth and change, the need for funding to sustain projects *after* they are developed, and the need for training at all levels. DCHIs also were fairly critical of funding agency and foundation strategies, feeling that funders were ill informed about DCHIs' needs and shortsighted in their funding goals. Meetings between stakeholders in both groups would help clarify the differing perspectives and open a dialogue that might lead to more agreement between what DCHIs feel they need and what funders feel they can provide.

In addition, a third party needs to be brought into the discussion: the individuals who contribute to, and use, DCHI resources. What does this constituency want from DCHIs that offer digital products to the cultural or educational community? What do they need from organizations that investigate or champion digital cultural heritage issues? Some baseline data on the perspectives of this community should be gathered before dialogue can be opened with this critical third partner.

Part V: Summary

The working paper "American Cultural Heritage Initiatives: A National Review" articulated some of the factors contributing to compromised sustainability for organizations and projects that focus on digital cultural heritage. This survey of DCHIs and funding agencies confirmed many of the findings in that paper and identified others, as indicated in the following lists.

Factors identified by the National Review and reiterated by the survey participants

- the impact of the economy and attendant budget shortfalls in all institutions
- declines in philanthropic support resulting from the economic downturn and a change in the nature of funding by foundations
- increasing competition and overlapping agendas among cultural heritage programs
- lack of business plans and other planning tools and strategies
- difficulty in communicating to the public programs that are hard to grasp or quantify and in demonstrating their importance for the public good
- lack of standards consensus to solve complex technical and content problems, particularly those involving digital preservation
- a political environment less receptive to the cultural community and digital initiatives

Factors identified by survey participants

- uncertain market needs
- unproven business models

- transition problems (when moving from a startup to an established organization)
- intellectual property roadblocks
- the impact of organizational dynamics (for example, leadership changes, board development, internal competition for resources)
- the failure of cultural organizations to operationalize digital cultural projects, leading to inadequate resources, untenable staff workloads, and poor long-term planning
- the need for stable repositories for digital cultural resources
- unanticipated costs of technology resources
- difficulties in moving into an international arena
- lack of clarity in interpreting the digital world

Factors identified by the National Review

- technology changes that make computing more powerful, but also more fragmented
- inadequate communication between library, scholarly, and arts communities

The findings outlined throughout this report identify concerns about the current status and tenuous state of many digital cultural initiatives. These findings, in concert with the recommendations proposed, offer a blueprint for those exploring appropriate strategies to support and strengthen digital cultural initiatives. The number and diversity of issues that affect DCHIs and jeopardize their future warrant a coordinated and consensus-driven approach to the problem.

APPENDIX A:

Participating Organizations and Contacts

American Council of Learned Societies	Steve Wheatley, Vice President
American Music Center	Richard Kessler, Executive Director
Americans for the Arts	Patricia Williams, Vice President/Chief Operating Officer
Art Museum Image Consortium	Jennifer Trant, Executive Director
ARTstor	James Shulman, Executive Director
Association for Computing in the Humanities	John Unsworth, Board President
Association of American Publishers	Barbara Meredith, Vice President, Professional Scholarly Publishing
Association of American University Presses	Peter Givler, Executive Director
Association of Moving Image Archivists	Sam Kula, Board President
Association of Research Libraries	Duane Webster, Executive Director
Berkman Center for Internet and Society	John Palfry, Executive Director
Canadian Heritage Information Network	Lyn Elliot Sherwood, Director General
Center for Arts and Culture	Ellen Lovell, Director
Coalition for Networked Information	Joan Lippincott, Associate Executive Director
College Art Association	Eve Sinaiko, Director of Publications
Colorado Digitization Project	Liz Bishoff, Executive Director
Consortium for the Interchange of Museum Information	John Perkins, Executive Director
Council on Library and Information Resources	Deanna Marcum, President
Dance Heritage Coalition	Elizabeth Aldrich, Director
Dublin Core Metadata Initiative	Stuart Weibel, Executive Director
Getty Grant Program	Deborah Marrow, Director
Getty Research Institute	Murtha Baca, Head, Standards and Digital Resource Management
H-Net	Mark Kornbluh, Executive Director
Institute for Advanced Technology in the Humanities	John Unsworth, Director
Institute of Museum and Library Services	Joyce Ray, Associate Deputy Director, Library Services
JSTOR	Kevin Guthrie, President
Making of America	John Price Wilkin, Associate Director, DLS
The Andrew W. Mellon Foundation	Don Waters, Program Officer, Scholarly Communications
Museum Computer Network	Chuck Patch, Board President
National Endowment for the Humanities	George Farr, Director, Preservation and Access
National Historical Publications & Records Commission	Roger Bruns, Acting Executive Director
National Initiative for a Networked Cultural Heritage	David Green, Executive Director
Research Libraries Group	James Michalko, President and CEO
Social Sciences Research Council	Joe Karaganis, Program Officer
Society of American Archivists	Steve Hensen, Past President
Text Encoding Initiative Consortium	John Unsworth, Board Member
Visual Resources Association	Elisa Lanzi, Board President
Women Writers Project	Julia Flanders, Director

APPENDIX B:

CLIR Survey for Digital Cultural Heritage Initiatives

1. Organization Name:

2. DCHI Name (if different from above):

3. Contact Information:
   (Contact Person)
   (Address)
   (Phone)
   (E-mail)
   (Organization/DCHI URL)

4. Type of DCHI (personal membership, organization membership, consortium, federation, other):

5. Mission/Purpose:

6. Personnel directly involved with DCHI operations:
   (Number)
   (Names, titles)

7. Governance Structure
   Board Members (names, titles, institutional affiliations):

   Committees, Advisory Groups, Task Forces, other:

8. Product/Service offered:

9. Relationships with other organizations:
   (Names of organizations)
   (Type of relationship: parent, sponsor, affiliate, member, funder, other)

10. How did the creation of the DCHI come about?

11. Was a needs assessment conducted prior to establishing operations? If yes, what were the results?

12. Source of Financial Support:
    (Business model)
    (Financial managment)

13. Sustainability Issues:
    (Problems in achieving)
    (Problems in sustaining)

APPENDIX C:

CLIR Survey for Organizations Funding Digital Cultural Heritage Initiatives

1. Funder Name:

2. Contact Information:
   (Contact Person)
   (Address)
   (Phone)
   (E-mail)
   (Organization/DCHI URL)

3. Type of Funding Organization (private, government, other):

4. Mission/Purpose:

5. Board Members (names, titles, institutional affiliations):

6. DCHI Funding Categories:
   (Name of program)

7. DCHI Projects Funded (by program, if relevant):
   (Amount of funding)
   (Funding period)

8. Reasons for Funding DCHIs:

9. Funding Agencies Assessment of DCHI Sustainability Issues:
   (Problems in achieving)
   (Problems in sustaining)

10. Funding Agencies—Programs Addressing Sustainability

Endnotes

All URLs were valid as of May 30, 2003.

1 From the TEI-C Web site at http://www.tei-c.org/Consortium/TEIcharter.html/.

2 From the Berkman Center Web site at http://cyber.law.harvard.edu/mission/ and http://www.cyber.law.harvard.edu.

3 From the Institute for the Advanced Technology in the Humanities Web site at http://www.iath.virginia.edu/aboutMission.html.

4 From the American Association of University Presses Web site at http://aaupnet.org.

5 See the *Virtual Museum of Canada* at http://www.virtualmuseum.ca/English/index_flashFT.html; last accessed May 15, 2003.

6 See the *Making of America* at http://www.hti.umich.edu/cgi/t/text/text-idx?c=moa;cc=moa;sid=45f73e524b48aeec4a7bff4b7fde528a;tpl=home.tpl; last accessed May 15, 2003.

7 American Council of Learned Societies. *History E-Book Project*. Available at http://www.historyebook.org/; last accessed May 15, 2003.

8 See the NewMusicBox Web magazine at http://www.newmusicbox.org/.

9 College Art Association. *CAA.Reviews*. Available at http://www.caareviews.org/contents.html.

10 Art Museum Image Consortium. *The AMICO Library*. Available at http://www.amico.org/library.html.

11 See the NewMusicJukebox at http://newmusicjukebox.org.

12 Americans for the Arts. *Online Field Directory*. Available at http://ww2.americansforthearts.org/scriptcontent/index_members_search.cfm.

[13] Association of Research Libraries. *ARL Digital Initiatives Database.* Available at http://www.arl.org/did/index.html.

[14] Dance Heritage Coalition. *Dance Research Resources: Finding Aids for Archival Resources.* Available at http://digilib.nypl.org/dynaweb/dhc/findaid.

[15] Institute for Advanced Technology in the Humanities. *Research: IATH-Developed Tools.* Available at http://www.iath.virginia.edu/researchTools.html.

[16] Text Encoding Initiative. *TEI Software Page.* Available at http://www.tei-c.org/Software/index.html.

[17] Dublin Core Metadata Initiative. *Dublin Core Metadata Element Set,* Version 1.1: Reference Description. Available at http://dublincore.org/documents/dces/.

[18] Consortium for the Computer Interchange of Museum Information. *XML Spectrum Schema.* Available at http://www.cimi.org/projects.html#6.

[19] The Getty Research Institute. *About the Research Institute: Getty Standards and Digital Resource Management.* Available at http://www.getty.edu/research/institute/standards/index.html.

[20] ARL Office of Leadership and Management Services. *Online Lyceum.* Available at http://www.arl.org/training/lyceum.html.

[21] The Berkman Center for Internet and Society. *Open Education: The Berkman Online Lecture and Discussion Series.* Available at http://cyber.law.harvard.edu/online/.

[22] Institute for Advanced Technology in the Humanities. *About IATH: Our Sponsors.* Available at http://www.iath.virginia.edu/aboutSponsors.html.

[23] See the Online Archive of California at http://www.oac.cdlib.org/ and the North Carolina Exploring Cultural Heritage Online project at http://www.ncecho.org/. Although neither of these projects was part of the survey, both were mentioned by survey respondents during discussions of business models.

[24] The need to incorporate digital projects into the operations and functions of an institution was recently reiterated in an independent assessment of the Getty-sponsored Los Angeles Electronic Cataloguing Initiative (*The Getty Los Angeles Cataloguing Initiative: A Status Report.* 2002. Prepared for the Getty Grant Program by Ann Schneider Consulting). Although the purpose of this assessment was not to examine or evaluate sustainability, it was a key issue that emerged

in the report's findings. Many award recipients felt they were not prepared for the long-term requirements of electronic cataloguing. While they originally viewed their projects as discrete efforts, they came to realize that they were really initiating long-term programs. Project staff felt they needed more time and money, that their senior administration needed to be educated about the long-term needs and costs of these projects, and that their staff needed more training in online delivery of information.

[25] Unsworth, John. 2001. *An Electronic Imprint at the University Press of Virginia: Publishing Originally Digital Scholarly Research. A Proposal to The Andrew W. Mellon Foundation*. Available at http://www.iath.virginia.edu/imprint.

[26] Digitization is largely supported through three program categories in the NEH's Division of Preservation and Access: Preserving and Creating Access to Humanities Collections; Reference Materials; and Research and Development Projects.

[27] IMLS funds most digitization projects through three categories within its National Leadership Grant Program: Library and Museum Collaborations; Museums Online; and Library Preservation or Digitization. Funds provided through its State Grants programs are controlled and distributed by the State Library Administrative Agencies.

[28] The Institute of Museum and Library Services. *A Framework of Guidance for Building Good Digital Collections*. November 16, 2001. Available at http://www.imls.gov/pubs/forumframework.htm.

[29] The National Endowment for the Humanities. *Grants to Preserve and Create Access to Collections*: Section entitled "For Projects to Digitize Collections." Available at http://www.neh.gov/grants/guidelines/pcahc.html.

[30] The IMLS also awarded grants to the following projects addressing sustainability issues:

University of Florida, Center for Library Automation, Gainesville, FL
$190,064

2002 National Leadership Grants for Libraries—Preservation or Digitization

In this three-year project, the Florida Center for Library Automation (FCLA) will develop a "Central Digital Archiving Facility" for the libraries of Florida's public college and university system. It will identify costs of all aspects of archiving for cost recovery purposes and serve as a model for the development of other central archiving facilities nationwide.

California Digital Library, Oakland
$337,542
2002 National Leadership Grants for Libraries—Library-Museum Collaboration

In this two-year research project, the California Digital Library, in partnership with Bancroft Library, the Berkeley Art Museum and Pacific Film Archive, and the Phoebe Hearst Museum of Anthropology, as well as the Grunwald Center and the graduate school of education and information studies, department of information studies at the University of California Los Angeles, will develop and complete a formal user evaluation of the Museums and Online Archive of California testbed. It will also develop evaluation tools that can be used by other digital libraries and make general recommendations for the improvement of digital libraries based on the results.

California Digital Library, Oakland
$374,736
2002 National Leadership Grants for Libraries—Research and Demonstration

In this two-year research project, the California Digital Library, in partnership with University of California Berkeley Library, will create a model preservation repository for multi-institutional digital materials following the Open Archival Information System (OAIS) reference model. The project will also explore and report on issues related to repository operation and policies.

31 See *The Model Edition Partnership* at http://mep.cla.sc.edu/.

32 Recently, a small group of DCHIs have begun discussing ways to integrate their needs by centralizing some of their activities and administration without dissolving the unique identities of each organization. This group, called the "Allied Digital Humanities Organizations Committee" (ADHOC), is exploring the feasibility of integrating—via an umbrella organization—various aspects of their operations, particularly the legal forms these organizations take, the business services they require, the publications they produce, and the events they sponsor. The DCHIs participating in ADHOC are the Association of Computing in the Humanities, the Association of Literary and Linguistic Computing, the National Initiative for a Networked Cultural Heritage, the Society for Textual Scholarship, and the Text Encoding Initiative Consortium.
From Unsworth, John. "Re: Welcome" *ADHOC Listerv* adhoc@lists.village.virginia.edu (private discussion list) (August 16, 2002).

56

COUNCIL ON LIBRARY AND INFORMATION RESOURCES

1755 Massachusetts Avenue, NW, Suite 500, Washington, DC 20036-2124
Tel: 202.939.4750 • Fax: 202.939.4765 • E-mail: info@clir.org • Web: www.clir.org

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

[X] This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

[ ] This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").